

Palliative care in hospital, hospice, at home: results from a systematic review

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Introduction

Palliative and hospice care has rapidly expanded, so that by January 2000 there were over 6560 service teams in 87 countries, with 933 teams in the UK, over 3600 in North America and over 350 in Australasia [1]. Care provision is in many settings; it has been estimated that in the UK about 11% of patients die in hospices, whereas over half of all those with a terminal phase to their illness die in hospital beds. In some areas, concerted efforts by home care services have seen a rise in deaths at home where this is the patient and the family's wish, but the trend is far from universal.

All the palliative care teams aim to alleviate distress through symptom control and attention to psychosocial concerns. They also seek to coordinate care and improve communication between professionals and with the individual patient and family. The constitution of the team varies from setting to setting. Some are nurse-only teams working with the primary care team in the community, although the trend is increasingly for inter-professional teams in all settings.

Evidence to support the development of inter-professional teams rather than uni-disciplinary teams has been developing. A systematic review of the literature was undertaken to assess whether there was an effect of palliative care teams. The effects of sub groups of teams operating in hospital, home or inpatient hospice, or with different groups of patients were considered. Home death rate was considered separately as it does not fit easily within one of these two groups. A total of 43 studies were identified which provided data on the place of care. The data extracted from the selected papers representing these 43 studies is considered in independent, but complementary, analyses. The qualitative and quantitative analyses need to be considered together, so as to draw a complete picture.

Methods

From the data extraction, 15 outcomes were selected from five areas. These outcomes are given in Table 1.

For each analysis it was necessary to include only one outcome per study, so a hierarchy for symptoms had to be devel-

oped. This is given in Table 2. When all the patient outcomes were combined, they followed the order of hierarchy given in Table 1. Similar approaches were adopted in other categories: carer outcomes were combined giving carer burden/morbidity preference over satisfaction. Pre-bereavement burden was considered the highest outcome.

For each outcome the effect size was calculated by dividing the estimated mean difference or the difference in proportions by the sample standard deviation (SD) [2], which allows comparison between outcomes measured on different scales. If analysed without further adjustment, equal importance would

Table 1. Outcomes extracted from included studies

Group	Outcome
Patient	Pain
	Other symptoms
	Quality of life
	Satisfaction
	Referral to other services
	Therapeutic interventions
Carer (pre-b.)	Satisfaction
	Burden/morbidity
Carer (post-b.)	Satisfaction
	Burden/morbidity
Patient/carer	Home death rates
	Health service use and costs
Professionals	Increased adherence to guidelines
	Prescribing rationale
	Health care/voluntary sector costs

Pre-b., pre-bereavement; post-b., post-bereavement.

Table 2. Hierarchy of symptoms used for extraction of 'other' category

Hierarchy	Symptoms
1	Nausea/vomiting
2	Constipation
3	Breathlessness
4	Mouth discomfort
5	Sleeplessness/insomnia

be given to large and small studies. Many analysts therefore weight by the sample size in each study, but this tends to over-emphasise large studies and can render the contribution from small studies negligible. Following Vine et al. [3] the analyses described were therefore weighted by the square root of the sample size.

The extracted data were then grouped for the particular setting.

Results

Quality of the studies

Of the 43 studies, much of the evidence was of poor quality. Most of the studies were of grade III, and those studies of grade I or II were often flawed, in some instances so much so that no results were found. Within certain outcomes there were enough studies to look at the effect of palliative care terms on specific outcomes.

Patient outcomes overall

The six patient outcomes extracted related to pain control, 'other symptoms', quality of life, satisfaction, referral and therapeutic interventions. Table 3 below shows the descriptive statistics for the effect size for these outcomes.

The weighted statistics in Table 3 are adjusted by the square root of the proxy sample size. The first three outcomes in the

table—pain, other symptoms and quality of life—all have enough studies to be considered individually.

However, the question of whether palliative care teams have an overall effect on patient outcomes can be investigated by combining these outcomes into a single variable. For each study only one outcome can be included (because of the correlation within studies described earlier) and the list of outcomes above was considered to be hierarchical for the creation of this variable. This means that if a study reported pain control and quality of life, then the pain outcome was taken as the principal outcome for this study for this analysis of a composite patient outcome variable.

Palliative care in hospital

Eight studies were identified that specifically examined the intervention of a hospital team or service (Table 4). A further four studies considered interventions that included a component of hospital support or care. The interventions were very varied; for example, individual nurses with unclear training, individual doctors or multiprofessional teams. Outcomes tended to include time in hospital, total length of time in palliative care and a range of symptoms or quality of life indicators.

Only one of the eight studies specifically examining a hospital team was grade II and had any comparison group (one study hops cgrade 11). This study suggested that those in the care of the hospital team spent less time in hospital, although an observational study of the same service found that quality of life deteriorated during care over time. The team consisted of one nurse with surgical and other support. The remaining studies were grade III, indicating that these were observational or retrospective studies. In some of these studies improvements in symptom management were found, although many of the potential biases and confounding variables were not accounted for.

In the four studies where the hospital based components of the service had not been separated from the other elements, it is difficult to judge the degree to which the hospital based component of the service is effective. One of these studies

Table 3. Descriptive of the effect size for the patient outcomes

	Pain	Other symptoms	QOL	Satisfaction	Referral	Therapeutic interventions
<i>N</i>	20	14	17	5	1	4
Mean	0.41	0.32	0.18	0.38	0.24	0.52
SD	0.50	0.48	0.41	0.27	–	0.40
Min	–0.14	–0.11	–0.62	0.05	–	0.03
Max	2.04	1.76	0.87	0.69	–	0.98
Weighted mean	0.37	0.20	0.20	0.24	–	0.43
SE (weighted mean)	0.13	0.15	0.12	0.14	–	0.23
95% CI	(0.11, 0.63)	(–0.10, 0.50)	(–0.04, 0.44)	(–0.04, 0.52)	–	(–0.01, 0.87)

CI, confidence interval; QOL, quality of life; SD, standard deviation; SE, standard error.

Table 4. Results of studies of hospital based services in palliative care

Author, country	Grade and signal score	Setting	Intervention	Outcome
Studies where the intervention was primarily a hospital team or service				
Axelsson et al. [7]; Sweden	IIB 10/15	Ostersund, hospital, city area	One specialist nurse, surgeon and other colleagues support	Less time in hospital for intervention group (3 versus 10 days), no other utilisation differences
Axelsson and Sjoden [8]; Sweden	IIIC 12/15	Ostersund, hospital, city area	One specialist nurse, surgeon and other colleagues support	Quality of life deteriorated during care
Bennett and Corcoran [9]; UK	IIIC 12/15	Leeds hospital, city area	Two, then three nurses supported by others in hospital	Increased referrals to home care team, longer time in palliative care
Edmonds et al. [10]; UK	IIIC 11/15	London, inner-city area	Two nurses plus two part-time doctors	Symptoms improved during care by team
Ellershaw et al. [11]; UK	IIIC 12/15	London, inner-city area	Nursing sisters and doctors	Symptoms improved during care by team
McQuillan et al. [12]; Wales	IIIB 11/15	Cardiff, city area of Wales	Palliative medicine doctor, with senior doctor support and pharmacist	Some changes in adherence to prescribing, but clinical guidelines were not used, face to face discussions instead
Wenk et al. [13]; Argentina	IIIC 7/15	San Nicolas hospital, urban area	Anaesthesiologist	Pain improved during care
Zwahlen [14]; France	IIIC 10/15	Regional hospital, city, urban and rural area	Multiprofessional team	Changes in morphine prescribing in hospital and other practice
Studies where the intervention included some hospital activity of the service, although the intervention was broader				
Addington-Hall et al. [15]; UK	IB 13/15	London hospital, inner-city area	Two non-specialist coordinating nurses working across patients in the region	No difference in symptoms or satisfaction, fewer hospital days
Higginson et al. [16]; UK	IIIB 13/15	Two London palliative care services, inner-city and suburban	Multiprofessional palliative care teams working across home and hospital	Improved symptoms, outcomes and satisfaction during care. Greater satisfaction with team than with hospital staff
Higginson and McCarthy [17]; UK	IIIC	London palliative care service, inner city	Multiprofessional palliative care teams working across home and hospital	Improved pain and other symptoms but breathlessness deteriorated
Ventafriidda et al. [18]; Italy	IIIB 10/15	Milan hospital, city area	Hospital team part of whole service, four hospital nurses (seven doctors and 100 volunteers worked across hospital and home care)	Improvements during care in some symptoms and aspects of quality of life

was a randomised controlled trial, the intervention was a co-ordinating service, and similar to the Swedish study, it appeared to lead to reduced time in hospital. The other studies were all grade III, and improved outcomes were found in some areas.

Taken together, the evidence seems to suggest that some of the palliative care teams or services can reduce time in hospital. This can be by a specialist nurse or a coordinating service, but it does not affect outcomes for the patients or carers. In one study quality of life deteriorated over time, but the multi-professional teams appeared to improve outcomes in some instances.

Home care

Home care services have been subject to the most evaluation. A total of 22 studies were identified that specifically examined the intervention of a home care team or service (Table 5). However, the nature of the interventions were very varied; for example, individual nurses with unclear training, individual doctors or multiprofessional teams. Teams were sometimes based from hospitals or from hospices or palliative care centres (both inpatient and home care). Some of the studies included specialists in palliative care, some generalists and some were not clear. Most of the studies were grade III, indicating that there was little rigorous comparative element in the study design. There was a wider range of settings including more multicentre studies and rural as well as urban and inner-city studies, although, as for hospital care, city based studies predominated.

In general, the outcomes were more positive than negative, in particular, indicating improved satisfaction and pain and symptom control when home care services, with multiprofessional teams of staff trained to some extent in palliative care, were compared with conventional care. Importantly, the three randomised controlled trials of this type of intervention produced similar findings. Note though that all of these are in the USA. There were two other randomised controlled trials, both in the UK and of non-specialist services, one of a co-ordinating service and one of basic nursing home support. These produced more equivocal results for patient outcomes.

All studies that considered costs suggested lower costs for the home care group, irrespective of the type of intervention.

Taken together the results suggest that home care is cost-effective. It seems that staff need to work in multiprofessional teams and to have had training in palliative care to improve patient outcomes.

Inpatient hospice or palliative care services

Only three studies were identified that specifically examined the intervention of an inpatient hospice service operating on its own. A further six studies considered interventions that were integrated inpatient hospice care and home care (Table 6). Both small and large units were considered, with very varying

Table 5. Results of studies of home care services in palliative care

Author, country	Grade and signal score	Setting	Intervention	Outcome
<i>Studies where the intervention was primarily a home care service</i>				
Bloom and Kissick [19]; US	IIIB 7/15	Two large teaching hospitals. Philadelphia, city	Home care medical supervision	Cost differences in last 2 weeks of life, home care 10.5 times cheaper than hospital care
Dessloch et al. [20]; Germany	IIIB 9/15	Not able to determine	Home care with doctor and nurse trained in palliative care	More positive comments about home care – environment, control over activities, nursing
Grande et al. [21]; UK	IB 12/15	City and urban areas	Hospital at home with 24 h non-specialist home care nursing	No difference in likelihood of dying at home, decreased out of hours GP visits
Higginson and Hearn [22]; UK	IIIC 12/15	Eleven palliative care teams in city, urban, suburban and rural areas of England and Ireland	Specialist multiprofessional home care teams including doctors, nurses and other professionals trained in palliative care	Significant improvements in pain during care
Hinton [23]; UK	IIIC 13/15	London based home care team in city and suburban areas	Specialist multiprofessional home care teams including doctors, nurses and other professionals trained in palliative care	Home care was rarely criticised. Relatives suffered emotionally more than patients in the final month

Hughes et al. [24]; US	IB 12/15	Urban and suburban area	Multiprofessional 24 h home care team, operating from a hospital	Higher levels of satisfaction and lower costs than control group
Jones [25]; UK	IIIC 13/15	Urban and rural areas	Specialist nurses working with GP and community nurses	Most successful team across a range of outcomes was specialist nurse with GP and community nurse
McCorkle et al. [26]; US	IB 9/15	City and suburban	1. Home care nursing (oncology nurses) and 2. Multiprofessional team (non specialist)	Control group of office based care had more symptom distress and social dependency
McCusker and Stoddard [27]; US	IIIB 10/15	Inner city, New York	24 h home care services, non-specialist nursing, social work and equipment	Lower costs and fewer hospital days compared to groups not receiving the service, and as team expanded
McMillan [28]; US	IIIC 8/15	West central Florida, rural, suburban and urban	Hospice home care service, training of staff and mix not described	Quality of life of caregivers 'maintained' over time
McMillan and Mahon [29]; US	IIIB 12/15	Florida, rural, suburban and urban	Hospice home care, nurse, physician, social workers, clergy, volunteers	Quality of life improved for some patients and deteriorated for others, pain control improved
McMillan and Mahon [30]; US	IIB 12/15	Florida, rural, suburban and urban	Hospice service—not described	Caregiving has a negative impact on health, when carers compared with non-caregiving adults
McWhinney et al. [31]; Canada	IC 12/15	Ontario, urban, suburban some rural	Home care support team, multiprofessional	No results—sample size not maintained
Mulligan [32]; Wales	IIB 14/15	South Wales, city and rural	Specialist home care team, nurses and volunteers	Intervention patients showed greater improvement in pain, more died at home
Parkes [33]; UK	IIIB 11/15	London based home care team in city and suburban areas	Specialist multiprofessional home care teams including doctors, nurses and other professionals trained in palliative care	Patients in care of service spent more time at home and had higher satisfaction than those who had not received it
Peruselli et al. [34]; Italy	IIIC 8/15	City, Milan	Hospital based home care team, multiprofessional	Improvements in pain and some symptoms during care
Silver [35]; US	IIIC 9/15	City, Washington	Multiprofessional hospice home care team—no details of staff or training	Patients spending longest in programme had greatest improvements in control of problems
Tramarin et al. [36]; Italy	IIB 10/15	Northern Italy, suburban, city, rural	Trained nurses with family doctor, psychologist and other team members	Cost savings of 35% for intervention group
Ventafriidda et al. [37]; Italy	IIB 11/15	Milan, city area	Multiprofessional team, providing home care counselling	Pain, weakness and anxiety improved most in home care group
Ventafriidda et al. [38]; Italy	IIB 11/15	Milan, city area	Multiprofessional home care team from palliative foundation	Home care group had better quality of life and performance than controls, with lower costs
Vinciguerra et al. [39, 40]; US	IIB 8/15	City, New York	Oncology based home care team	Home care group had similar performance status and survival to controls, had less morphine. Service had lower costs
Zimmer et al. [41]; US	IB 12/15	City, New York	Multiprofessional home care team, with background in geriatric care	Home care group had greater satisfaction and lower use of hospital services and lower costs than control group

Table 6. Results of studies of inpatient hospice and palliative care services

Author, country	Grade and signal score	Setting	Intervention	Outcome
Studies where the intervention was primarily an inpatient service, hospice or palliative care unit				
Hinton [23]; UK	IIC 12/15	London, city and suburban areas	Hospice, versus hospital and foundation home, some home care was available	Hospices received most satisfaction, hospital was between foundation home and hospital
McIlmurray and Warren [42]; UK	IIC 11/15	Lancaster, urban, suburban and rural	Hospice palliative care service, mean length of stay 21 days	Symptom control improved during care
Viney et al. [43]; Australia	IIB 8/15	Wollongong, rural and suburban area New South Wales	Two palliative care inpatient units (one small, one large) versus general hospital	Patients in palliative care units had higher quality of life and less anxiety than did hospital patients. The small palliative care unit patients expressed more helplessness than the hospital patients
Studies where the intervention was of an integrated hospice and home care service				
Dunt et al. [44]; Australia	IIB 8/15	Melbourne, city and suburban	Ten hospice beds, 50 nursing home beds and home care team	Hospice patients had shorter pain duration, higher satisfaction with care than control group. Costs and amount of home care similar
Kane et al. [45, 47]; Wales et al. [46]; US	IA 10/15	Los Angeles, California, city	Inpatient hospice unit on general hospital ward, with home care consultation versus conventional care	No significant difference in symptom prevalence or survival, some advantage for hospice in interpersonal care and carer satisfaction.
Mor et al. [48]; Morris et al. [49]; US	IIB 11/15	Multiple settings, urban and rural across the US	Inpatient hospices with beds and home care programmes, and primarily home care hospice programmes versus conventional care	More satisfaction from carers with both models of hospice care, but few differences in patient satisfaction or quality of life. Hospice home care group were least likely to have had pain
Parkes [50]; UK	IIC 10/15	London, city and suburban	Inpatient hospice with home care programme	Improvement overall during a 10 year period in hospital settings. Initially improved symptom control and satisfaction for hospice group
Seale [51]; UK	IIIA 11/15	London, city and suburban	Inpatient hospice programme with home care team, versus conventional care	Better pain control in inpatient hospice, satisfaction high in all settings
Wakefield and Ashby [52]; Australia	IIB 9/15	South Australia, Adelaide, urban, suburban and rural	Range of different inpatient hospice and home care services and conventional care	Hospice care significantly more likely to be rated as excellent and as the right place to die

structures, often with unclear training of staff. The hospice and palliative care services were compared with a range of other alternatives, hospital care, a foundation home or conventional home and hospital care.

In general, the outcomes were more positive than negative, indicating similar or greater satisfaction, particularly for carers and similar or improved symptom control in the palliative care/hospice group. Data regarding quality of life was largely equivocal.

Other models of palliative care

The review identified no studies examining day care, outpatient hospice care or nurse specialists working independently of a multi-professional service.

Discussion and conclusions

The qualitative appraisal of the literature is concordant with that of the quantitative analysis, indicating small positive benefits for hospice and palliative care services. The qualitative review was able to assess to a limited extent whether effects were found by different models of service. Although the number of studies were small, there does not appear to be any major difference between city, urban and rural areas in the results found. However, this finding needs to be interpreted with caution, as many of the studies were of poor quality, the interventions were varied and the outcomes measured varied also. One of the most consistent effects was of improved satisfaction for carers, and to a lesser extent for patients when the services were compared to conventional or non-hospice services. In some instances improved pain and symptom control or lessened anxiety was found. Most evidence is available for home care services, with a smaller number of studies of inpatient hospice or palliative care and a small number of poor quality studies considering hospital support, although it does seem that these services reduce time in hospital.

Overall, the review supports the effectiveness of palliative care teams in differing settings, and there appears to be an advantage of multidisciplinary over uni-disciplinary teams.

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